

REMARKS

Prior to the present amendment, claims 1-3, 4, 8-16, 19-20, and 22-27 were pending. By the present amendment, claims 2-4 and 8-16 have been cancelled. Applicants reserve the right to prosecute the subject matter of these claims in an application that claims priority to the present application. Claims 28-39 have been added. Therefore, after entry of the present amendments, claims 1, 19-20, and 22-39 are pending.

Support for claims 28 – 30 can be found in paragraph 27. Support for claims 31 – 35 can be found in FIGs. 1 – 2C. Support for claims 36 – 39 can be found in paragraphs 18 and 19. Claims 1 and 19 have been amended to include additional structural limitations, such as the limitations of claim 2. Therefore, claim 2 has been cancelled. Claim 3 has been cancelled because a revised form of the limitation of this claim appears in new claim 31.

The specification has been amended to correct typographical errors in paragraphs [0025] and [0027].

Interview Summary

Applicants thank the Examiner for the courtesies extended during the telephonic interview of July 25th in which the independent claims were discussed and different structural limitations were discussed that could be added to the claims in view of the references of record.

Summary of Independent Claims

The subject matter of claims 1 and 19 is directed to devices and methods for delivering a therapeutic agent to a target site in the body. To ensure retention of the therapeutic in the target site yet allow easy passage of the therapeutic through a delivery device, a non-Newtonian fluid having therapeutic properties is loaded in the delivery device and the fluid is exposed to a viscosity adjuster. The viscosity adjuster affects the shear stress or shear rate of the fluid to change the viscosity of the fluid. The viscosity of a shear thickening fluid, a specific type of non-Newtonian fluid, increases as the shear stress or shear rate in the fluid increases. The viscosity of a shear thinning fluid, another

type of non-Newtonian fluid, decreases as the shear stress or shear rate in the fluid increases.

Accordingly, if a shear thickening fluid having therapeutic properties is delivered via a delivery device, the viscosity of the fluid is such that the fluid easily passes through the delivery device. Prior to exiting the device and at an appropriate distance proximal to the site of injection in the target site, the fluid is exposed to the viscosity adjuster in the channel of the delivery device. This increases the shear stress or shear rate in the fluid resulting in an increase in the viscosity of the fluid. The fluid is then injected into a target site, where, because of the increased viscosity of the fluid, retention of the therapeutic is enhanced. (See paragraph 19). Although an example is provided using a shear thickening fluid, it should be noted that the use of a non-Newtonian fluid is positively recited in claims 1 and 19.

Rejection of Claims Under 35 U.S.C. 102 by Antanavich et al.

Claims 1 – 3, 19 – 20, 22, and 25 stand rejected for allegedly being anticipated by U.S. Patent No. 6,132,396 issued to Antanavich et al. (hereinafter “Antanavich”). Applicants traverse this rejection at least because Antanavich does not describe a delivery device having all the structural elements of the device of the present invention. Amended claims 1 and 19 define the viscosity adjuster as comprising at least two non-overlapping projections extending from one or more walls of the channel and leaving an open flow channel parallel to the lumen’s longitudinal axis.

Antanavich describes a device having a static mixer device having a coaxial shaft and parallel arcs thereon to provide turbulent flow and mixing. The gaps defined by these arcs are offset, such that open flow is interrupted as the fluid flows down the outer sleeve.

The mixer device in Antanavich has several structural differences from the present invention. For example, in the present invention, the projections protrude from the walls of the channel, while the arcs in Antanavich extend from the coaxial shaft. Furthermore, the various arcs in Antanavich prevent open flow along the longitudinal axis of the outer sleeve. In accordance with the device and method of claims 1 and 19, respectively, the

projections leave an open space between them, allowing for open flow along a portion of the lumen.

Because Antanavich does not describe each and every element of claims 1 and 19, Applicants respectfully request the withdrawal of this rejection.

Rejection of Claims Under 35 U.S.C. 103 By Antanavich in View of Freyman et al. and Sawhney et al.

Claim 23, 24, 26, and 27 stand rejected for allegedly being rendered obvious by Antanavich in view of U.S. Published Application 2004/0030282 to Freyman et al. (hereinafter “Freyman”) or U.S. Patent 6,179,862 issued to Sawhney (hereinafter “Sawheny”). Applicants traverse this rejection at least because Freyman and Sawhney do not make up for the deficiencies of Antanavich (such as the missing structural elements listed above, for example). Accordingly, Applicants respectfully request the withdraw of this rejection.

CONCLUSION

It is respectfully submitted that the present application is now in condition for allowance, which action is respectfully requested. The Examiner is invited to contact Applicants' representative to discuss any issue that would expedite allowance of the subject application.

Any fees for extension(s) of time or additional fees required in connection with the filing of this response, are hereby petitioned under 37 C.F.R. § 1.136(a), and the Commissioner is authorized to charge any such required fees or to credit any overpayment to Kenyon & Kenyon's Deposit Account No. 11-0600.

Respectfully submitted,
KENYON & KENYON LLP

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By: /Zeba Ali/

(Reg. No. 51,392)

1500 K Street, N.W.
Suite 700
Washington, D.C. 20005
Tel: (202) 220-4200
Fax: (202) 220-4201